

Controlling Driver Behavior Through Automated Speed Enforcement

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Speed Deterrence Theory – *The Traffic Safety Toolbox, ITE*

- General deterrence is the process of preventing offenses by influencing the potential offender through the probability of detection and its consequences.
- For most drivers, their perception of risk involves the risk of legal intervention and not the risk of a crash.
- The risk of legal intervention is broken down further into three categories
 - Perceived certainty of punishment
 - Perceived severity of punishment
 - Perceived swiftness of punishment
- Photographic enforcement can be used to heighten the perception of risk of legal intervention.

Background

June 2003

City of Charlotte receives legislative approval for the use of automated speed enforcement.

May 2004

Warning signs are installed in 14 Enforcement corridors.

August 2, 2004

First SafeSpeed citations are issued

Fall 2005

Vendor begins equipping vans with dual camera systems.

April, 2006

66,644 Citations issued by the SafeSpeed program (*18 months of operation*)

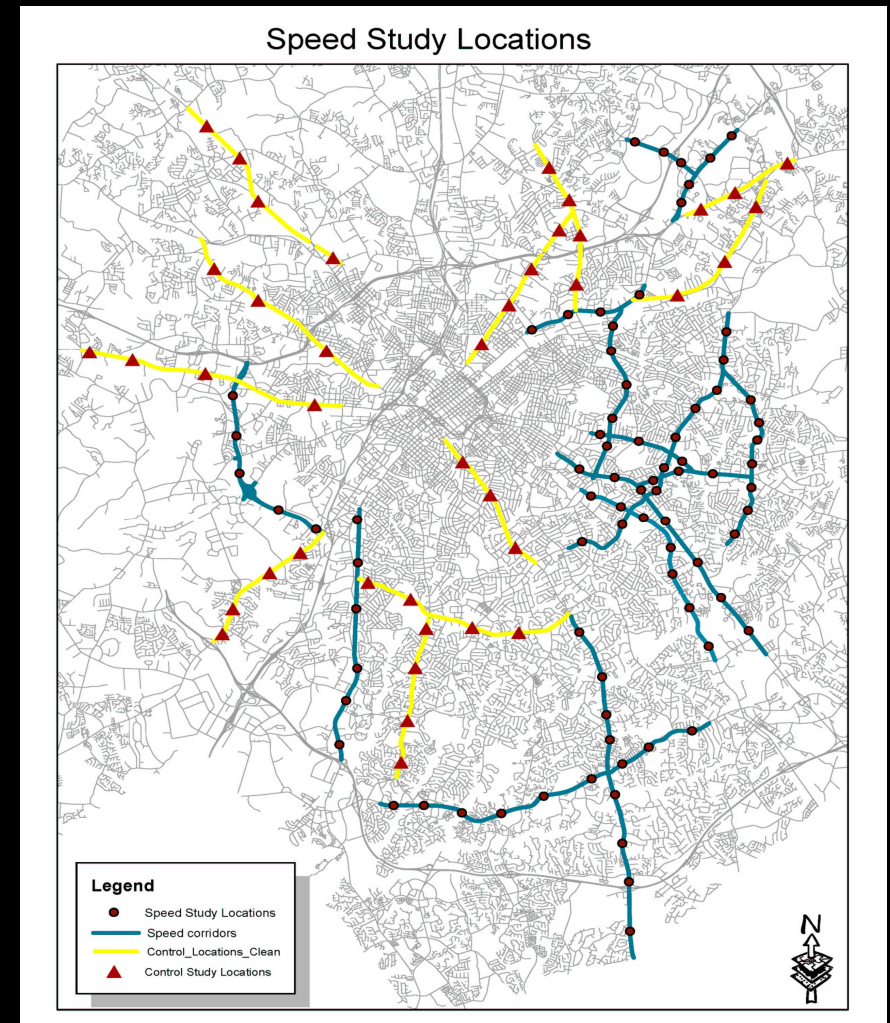
May 26, 2006

SafeSpeed and SafeLight programs are suspended indefinitely by the Charlotte City Council due to a ruling by the North Carolina Court of Appeals.



Measuring the Effectiveness

- Data Collection
 - Speeds
 - Annual speed studies
 - 120 total locations
 - 80 locations w/ active enforcement
 - 40 control locations
 - Collision Data
 - Crash information for enforcement corridors and control corridors



Measuring the Effectiveness

Initial Before and After Results (speed)

- Compared Before conditions with the conditions approximately 3 months after the first citation was issued.
- 70% of the study locations had a lower mean speed after program implementation.
- Median and 85th percentile speeds decreased by .88 and .99 mph respectively.
- The vehicle speeds of the average motorist remained relatively constant based the changes in median and 85th percentile speeds.
- Percentage of vehicles exceeding the speed limit by 10mph or more decreased by 55% in the after period.



Measuring the Effectiveness

Initial Before and After Results (collisions)

- Limited “After” period sample size
 - Before period included collision data from 1/1/2000-8/1/2004
 - After period was limited to data from 8/2/2004-12/31/2004
- Statistically significant results were obtained. An estimated collision reduction of 12% was attributed to the program.
- Certain corridors attained an estimated 14% reduction based on increased enforcement activity.



Measuring the Effectiveness

Latest Before and After Results (speed)

- Compared Before conditions with the conditions approximately 12 months after the first citation was issued.
- Data is preliminary, ITRE is evaluating their methodology
- Median and 85th percentile speeds remained lower than in the Before period.
- Median and 85th percentile speeds decreased by .67 and .77 mph respectively.
- Percentage of vehicles exceeding the speed limit by 10mph or more remained lower in this study as well. A 27% reduction from the before period was observed.



Summary

Did the program control driver behavior related to speeding?

- Based on the speed and collision data, YES.
- These reductions were obtained without any capital or operating expenditures by the City of Charlotte.
- Speed Deterrence Theory – Remember?
 - ✓ Perceived certainty of punishment
 - ❖ In 2004 CMPD issued 27,150 speeding citations
 - ❖ In 2005 SafeSpeed alone issued 43,027

Next Steps

- Program operation remains suspended
- Working through the City's legal staff to determine options and possible solutions for re-starting both automated enforcement programs.
- City staff will begin working with legislators in Raleigh to re-authorize the statute allowing photographic speed enforcement. Current legislation expires on June 30th, 2007.
- ITRE is currently evaluating the remaining collision data for the after period between Jan. 1, 2005 and Dec 31, 2005.
- Future studies are planned.



Safelight – Charlotte's Red Light Running Program



- Operation is also suspended as a result of the High Point litigation.
- Recently conducted a simple before and after study to gauge performance at all Safelight locations since program inception.
 - Evaluated existing locations only for the period 1997-2005.
 - Before period of 1997-2003 and After period of 2004-2005.
- Intersections in the before period averaged 630 collisions annually.
- Intersections in the after period averaged 355 collisions annually.
- Also observed a decrease in the percentage of injury collisions.





Safelight – Charlotte's Red Light Running Program



- Since its inception in 1999, Charlotte's Safelight program has consistently demonstrated reductions in angle and turning collisions at camera equipped intersections.
- Signs and equipment have been observed to be similarly effective without citations being issued. *Deterrence theory again!*
- Very interested in the effects that the program suspension will have on equipped intersections. Considerable media coverage of the suspension.



Parting Shot



SPEED
LIMIT
35
PHOTO
ENFORCED

THANK YOU